

Claim Or Claims

We claim:

- 1) A method of fabricating a cassette for a SOFC stack comprising the steps of
 - a. stamping a separator plate,
 - 5 b. stamping a frame,
 - c. attaching a PEN cell to said frame, and
 - d. attaching said frame to said separator plate.
- 2) The method of claim 1 wherein said separator plate and said frame are formed of 400 series stainless steel.
- 10 3) The method of claim 1 further comprising providing current collectors in communication with each side of said separator plate.
- 4) The method of claim 3 wherein said current collectors are provided as a flexible electrically conducting material.
- 5) The method of claim 4 wherein said flexible electrically conducting material is a
15 screen.
- 6) The method of claim 5 wherein the screen provided on the cathode, or oxidizing side of said separator plate is fabricated from 400 series stainless steel.
- 7) The method of claim 5 wherein the screen provided on the anode, or reducing side of said separator plate is fabricated from nickel.
- 20 8) A method of fabricating a SOFC stack comprising the steps of:
 - a. fabricating a plurality of cassettes according to the method of claim 1,
 - b. stacking said plurality of cassettes on top of one another so that the anode side of each cassette is in electrical communication with the cathode side of each adjacent cassette, and

- c. forming an electrically insulating gas tight seal between the frame of each cassette and the separator plate of each adjacent cassette.
- 9) The method of claim 8 wherein the electrically insulating gas tight seal is selected from the group consisting of a glass and an insulating gasket.
- 5 10) The method of claim 9 wherein the insulating gasket is alumina.
- 11) The method of claim 10 wherein the insulating gasket is hermetically bonded using a braze.
- 12) The method of claim 10 wherein the insulating gasket is hermetically bonded using glass.
- 10 13) A solid oxide fuel cell formed of a plurality of cassettes, each cassette comprising:
 - a. a stamped separator plate,
 - b. a stamped frame,
 - c. a PEN cell attached to said frame, wherein the frame of each cassette is attached to the separator plate of each successive cassette in a gas tight, non-conducting seal that maintains electrical isolation between the anode side and the cathode side of each PEN cell.
- 15 14) The method of claim 13 wherein the electrically insulating gas tight seal is selected from the group consisting of a glass and an insulating gasket.
- 15) The method of claim 14 wherein the insulating gasket is alumina.
- 20 16) The solid oxide fuel cell of claim 11 wherein said separator plate and said frame are formed of 400 series stainless steel.
- 17) The solid oxide fuel cell of claim 13 further comprising current collectors maintaining electrical connection between each side of each PEN cell and each adjacent separator plate.

- 18) The solid oxide fuel cell of claim 17 wherein said current collectors are a flexible electrically conducting material.
- 19) The solid oxide fuel cell of claim 18 wherein said flexible electrically conducting material is a screen.
- 5 20) The solid oxide fuel cell of claim 19 wherein the screen on the cathode, or oxidizing side of the PEN cells is fabricated from 400 series stainless steel.
- 21) The solid oxide fuel cell of claim 19 wherein the screen provided on the anode, or reducing side of the PEN cells is fabricated from nickel.